

**IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANTS: Michael C. Park and Scott Gilbert
SERIAL NO.: Unassigned
FILING DATE: on even date herewith
TITLE: INTERACTIVE IMAGE SEAMER FOR PANORAMIC IMAGES
EXAMINER: Unassigned
GROUP ART UNIT: Unassigned
ATTY. DKT. NO.: 23627-08902 (IMV-098-C1-US)

CERTIFICATE OF MAILING

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By: 

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MAIL STOP PATENT APPLICATION
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PRELIMINARY AMENDMENT A

Sir:

Prior to the examination of the above referenced application, please amend the application as indicated below:

IN THE SPECIFICATION:

On page 1, replace the sentence on lines 4-5 in its entirety with --This application is a continuation of U.S. Serial No. 09/602,290 filed on June 23, 2000; which (a) claims the benefit of U.S. Serial No. 60/142,573 filed July 7, 1999; and (b) is a continuation-in-part of U.S. Serial

No. 09/310,715 filed May 12, 1999. The contents of all of the foregoing are hereby incorporated by reference.--

On page 1, delete the heading and the sentence on lines 7-9.

On pages 27 and 28, replace the abstract in its entirety with

--An interactive computer program for seaming a number of images into a panorama.

Various parameters which affect how the images are seamed can be changed interactively.

Parameters such as position, orientation, focal length, which image will be visible where images overlap, and the opacity curve can be changed. The result of any change is immediately visible.

A user can move the control points, thereby "morphing" or distorting the contribution to the panorama of an image. Each pixel is assigned an "alpha" value which indicates the opacity value of that pixel in an area where images overlap. Alpha values can be changed according to a pre-established curve. The original images are not changed. Instead, only the transform between the original images and the final panorama is changed.--

IN THE CLAIMS:

Please cancel claims 1-14. Please add new claims 15-24. For the Examiner's convenience, all pending claims are shown below.

15. (New) An interactive seamer for panoramic images, comprising:

a user interface having a first display area for displaying a panoramic image and a second display area for displaying two or more single view images projected from the panoramic image, the two or more single view images having

overlapping portions at least partially encompassed by at least one outlined area, each pixel in the overlapping portions encompassed by the outlined area having an opacity value that is determined by the location of the pixel in the outlined area and a predetermined opacity curve; and
an image seamer for seaming the two or more single view images into the panoramic image, wherein the opacity values of the pixels in the overlapping portions encompassed by the outlined area can be manually adjusted by changing the size of the outlined area in the second display area.

16. (New) An interactive seamer for panoramic images, comprising:

a user interface having a first display area for displaying a panoramic image generated from a number of single view images and a second display area for displaying a selected single view image projected from the panoramic image, wherein control points are superimposed on an area in the panoramic image corresponding to the selected single view image for manually inducing changes in parts of the panoramic image, the manually induced changes being independent of placement or movement of the selected single view image within the panoramic image; and
an image seamer for seaming the selected single view image into the panoramic image based on user specified parameters.

17. (New) The interactive seamer of claim 16, wherein at least one parameter adjusts the focal length of the selected portion of the panoramic image.

18. (New) The interactive seamer of claim 16, wherein the user interface includes a third display area for displaying values of parameters.

19. (New) The interactive seamer of claim 16, wherein at least one parameter provides high resolution zoom to enable a user to examine artifacts without requiring a high resolution representation of the entire panoramic image.

20. (New) The interactive seamer of claim 16, wherein at least one parameter specifies an artificial horizon in the panoramic image.

21. (New) The interactive seamer of claim 16, wherein at least one parameter specifies the lay down order of multiple single view images seamed together to form the panoramic image.

22. (New) The interactive seamer of claim 16, wherein the user interface includes multiple view windows for simultaneously showing a perspectively correct view of the selected single view image and a changed view of the single view image.

23. (New) The interactive seamer of claim 16, wherein the selected single view image with manually induced changes is capable of being repositioned within the panoramic image without disturbing the manually induced changes.

24. (New) A method of interactively seaming single view images into a panoramic image, comprising:

- displaying a panoramic image in a first display area of a user interface;

- displaying two or more single view images projected from the panoramic image in a second display area of the user interface, the two or more single view images having overlapping portions at least partially encompassed by at least one outlined area, each pixel in the overlapping portions encompassed by the outlined area having an opacity value that is determined by the location of the pixel in the outlined area and a predetermined opacity curve; and

seaming the two or more single view images into the panoramic image, wherein the opacity values of the pixels in the overlapping portions encompassed by the outlined area can be manually adjusted by changing the size of the outlined area in the second display area.